

Abstract

A nitride semiconductor device used chiefly as an LD and an LED element. In order to improve the output and to decrease V_f , the device is given either a three-layer structure in which a 5 nitride semiconductor layer doped with n-type impurities serving as an n-type contact layer where an n-electrode is formed is sandwiched between undoped nitride semiconductor layers; or a superlattice structure of nitride. The n-type contact layer has a carrier concentration exceeding $3 \times 10^{18} \text{ cm}^{-3}$, and the resistivity 10 can be lowered below $8 \times 10^{-3} \Omega \text{cm}$.